

Rejections Under 35 USC § 103

Claims 2-6 were rejected under 35 USC § 103(a) as being unpatentable over Yasushi et al. (JP 9-232516). This rejection is traversed, and reconsideration and withdrawal thereof respectfully requested. The following is a comparison of the instant invention and the cited prior art.

An aspect of the invention, per claim 2, is a semiconductor device comprising a semiconductor substrate and a first insulating film formed on the semiconductor substrate. A polysilicon resistor film is formed on the first insulating film. A second insulating film is formed on the resistor film. A high heat conductor film consisting of a highly heat-conducting material is formed on a second insulating film. A pair of terminal wirings are formed on the second insulating film and connected to the resistor film. The thickness of the high conductor film is thicker than a thickness of the resistor film.

Another aspect of this invention, per claim 6, is a semiconductor device, comprising a semiconductor substrate and a first insulating film formed on said semiconductor substrate. A polysilicon resistor film is formed on the first insulating film and a second insulating film is formed on the resistor film. A high heat conductor film consisting of a highly heat-conducting material is formed on the second insulating film. A pair of terminal wirings are formed on the second insulating film and are connected to the resistor film. A thickness of the second insulating film is thinner than a thickness of the resistor film, and a thickness of the high heat conductor film is thicker than a thickness of the resistor film.

The Examiner asserted that Yasushi teaches the claimed semiconductor device except for the thickness of the high heat conductor film being thicker than the thickness of the resistor film and the thickness of the resistor film being twice as thick or thicker than the resistor film. The Examiner, however, asserted that it would have been obvious to find the optimal thickness of the

high heat conductor film, since the amount of material in the heat sink will determine the degree of the heat transfer from the desired area. The Examiner further concludes that it would have been obvious to alter the size of the heat sink according to the desired amount of heat dissipation. As regards claim 5, the Examiner asserts that it would have been obvious to connect one of the terminal wirings to the heat sink to improve thermal conductivity.

Yasushi is directed towards improving heat resistance to continuous power. The purpose of the instant invention, however, is to improve resistance to a power surge, such as electrostatic discharge. Therefore, altering the size of the Yasushi heat sink would not improve the resistance to a power surge. The film thicknesses of the instant invention are very important in the instant invention. While varying the size of the Yasushi heat sink may improve heat transfer in continuous power applications, it would have little effect in improving the resistance to power surges, such as electrostatic discharges. Therefore, it would not be obvious to vary the size of the Yasushi heat sink to obtain the claimed device.

Obviousness can be established only by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990).

Yasushi does not suggest a semiconductor device as claimed wherein a thickness of the high heat conductor film is thicker than a thickness of the resistor film. Yasushi does not suggest the criticality of forming the high heat conductor film thicker than a thickness of the resistor film.

As explained on page 7 of the specification and Figures 3 and 4, the relative thickness of the high heat conductor film and resistor film is **critical**. When the high heat conductor film is thicker than the resistor film, electrostatic discharge breakdown is prevented. Yasushi does not suggest this critical feature when the thickness of the high heat conductor film is thicker than a thickness of the resistor film. Because of at least the criticality of the relative thicknesses of the high heat conductor film and the resistor film, selecting the high heat conductor film to be thicker than a thickness of the resistor film is not a matter of design choice. Therefore, claims 2 and 6 are not obvious in view of Yasushi.

The dependent claims further distinguish the claimed invention over Yasushi. Claim 3 for example, requires that the thickness of the high heat conductor film is twice the thickness of the resistor film or thicker. Claim 4, requires that the width of the high heat conductor film is wider than a width of the resistor film and claim 5 requires that the high heat conductor film is united with one of the terminal wirings.

The Examiner considers the requirement that the high heat conductor film is twice the thickness of the resistor film or thicker to be a matter of design choice. The Examiner furthermore, concludes it would have been obvious that the size of the heat sink determines the degree of heat transfer from the desired area, thus it would have been obvious to alter the size of the heat sink according to the desired amount of heat dissipation.

Claim 3, however, is not obvious. The prior art must suggest the desirability of the modification, whereas there is no suggestion in Yasushi to provide a high heat conductor film that is twice the thickness of the resistor film or thicker. Furthermore, as explained above, Yasushi does not suggest the criticality of using a high heat conductor film that is thicker than the resistor film.

As regards claim 4, the Examiner asserted that Yasushi teaches a high heat conductor film that is wider than the width of the resistor film. Claim 4, however, is not obvious for at least the same reasons as independent claim 2.

As regards claim 5, the Examiner concludes that it would have been obvious to connect one of the terminal wires to the heat sink to improve thermal conductivity.

Claim 5 is allowable for at least the same reasons as claim 2. Furthermore, there is no suggestion in Yasushi to provide a high heat conductor film that is united with one of the terminal wirings in order to improve thermal conductivity, as asserted by the Examiner.

The Examiner asserts that evidence of the criticality of the high heat conductor film having a thickness greater than that of the resistor has not been presented. However, the instant specification clearly teaches the criticality of the claimed thickness relationship. As shown in FIG. 4, if a thickness of the high heat conductor film is thicker than a thickness of the resistor film the peak temperature is significantly reduced (curve c, d, e) and permanent thermal breakdown does not occur (Specification, page. 7, lines 18 to page 8, line 9).

In rejecting a claim under 35 U.S.C. § 103, the Examiner is required to discharge the initial burden by, *inter alia*, making "**clear and particular**" factual findings as to a **specific understanding** or **specific technological principle** which would have **realistically** impelled one having ordinary skill in the art to modify an applied reference to arrive at the claimed invention based upon facts, -- not generalizations. *Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 57 USPQ2d 1161 (Fed. Cir. 2000); *Ecolchem Inc. v. Southern California Edison, Co.*, 227 F.3d 1361, 56 USPQ2d 1065 (Fed. Cir. 2000); *In re Kotzab*, 217 F.3d 1365, 55 USPQ2d 1313 (Fed. Cir. 2000); *In re Dembiczak*, 175 F.3d 994, 50 USPQ2d 1614 (Fed. Cir. 1999). That burden has not been

discharged, as the Examiner has provided not provide a factual basis for modifying the Yasushi semiconductor device to provide the claimed device.

The Examiner did not make the requisite "clear and particular" factual findings to support the conclusion that one having ordinary skill in the art would have been realistically lead one to deviate from the Yasushi methodology of forming a semiconductor device. Instead, the Examiner merely announced that the size of the heat sink will determine the degree of heat transfer from a desired area and the size of the heat sink can be altered according to the desired amount of heat dissipation, therefore, it would have been obvious to modify the teaching of Yasushi.

There is no factual basis in the cited prior art to support the conclusion that one having ordinary skill in the art would have been led to form a semiconductor device with a high heat conductor film thicker than thickness of the resistor film. The requisite motivation to support the ultimate legal conclusion of obviousness under 35 U.S.C. § 103 is not an abstract concept, but must stem from the applied prior art as a whole and realistically impel one having ordinary skill in the art to modify a specific reference in a specific manner to arrive at a specifically claimed invention. *In re Deuel*, 51 F.3d 1552, 34 USPQ2d 1210 (Fed. Cir. 1995); *In re Newell*, 891 F.2d 899, 13 USPQ2d 1248 (Fed. Cir. 1989). Accordingly, the Examiner is charged with the initial burden of identifying a source in the applied prior art for the requisite realistic motivation. *Smiths Industries Medical System v. Vital Signs, Inc.*, 183 F.3d 1347, 51 USPQ2d 1415 (Fed. Cir. 1999); *In re Mayne*, 104 F.3d 1339, 41 USPQ2d 1449 (Fed. Cir. 1997). The Examiner has not met the burden of identifying a source in the applied prior art for the required realistic motivation because Yasushi does not teach the high heat conductor film thicker than the thickness of the resistor film.

The only teaching of a semiconductor device with the high heat conductor film is thicker than the thickness of the resistor film, as required by claims 2 and 6, is found in Applicant's disclosure. However, the teaching or suggestion to make a claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). The Examiner's conclusion of obviousness is not supported by any factual evidence. The Examiner's retrospective assessment of the claimed invention and use of unsupported conclusory statements are not legally sufficient to generate a case of *prima facie* obviousness. The motivation for modifying the prior art must come from the prior art and must be based on facts. The Examiner is not free to ignore the judicial requirement for facts. To do so is legal error. *In re Lee*, 277 F.3d 1338 (Fed. Cir. 2002). The Examiner has not presented a *prima facie* case of obviousness for the instant claims. There is no teaching in the cited prior art of the thickness of the high heat conductor film thicker than the thickness of the resistor film.

In light of the Amendments and Remarks above, this application should be considered in condition for allowance. If there are any question regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated to expedite the prosecution of the application.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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